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Letter to the Editor

Refusal of anti-coronavirus disease 2019 vaccination in cancer patients: Is there a difference between the sexes?



Henri-Corto Stoeklé ^{a,1}, Sakina Sekkate ^{b,1}, Elisabeth Angellier ^c,
Christian Hervé ^{a,d,e,f,*}, Philippe Beuzeboc ^{b,**,2}

^a Department of Ethics and Scientific Integrity, Foch Hospital, Suresnes, France

^b Oncology and Supportive Care Department, Foch Hospital, Suresnes, France

^c Department of Supportive Care and Palliative Care, Institut Curie, France

^d University of Paris, Paris, France

^e Veterinary Academy of France, Paris, France

^f International Academy of Medical Ethics and Public Health, University of Paris, Paris, France

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Patients with cancer have a higher than average risk of death from coronavirus disease 2019 (COVID-19) [1], and the positive effects of vaccination have been confirmed [2]. Nevertheless, a study by Di Noia *et al.* published in the European Journal of Cancer has reported a high rate of refusal of anti-COVID-19 vaccination in a cohort of 914 Italian patients with cancer [3]. We performed an analogous but qualitative study at Foch Hospital, with the aim of identifying the reasons for which patients treated by chemotherapy or immunotherapy at the day hospital refuse anti-COVID-19 vaccination, even after receiving information on the subject during a consultation. This study was approved by the institutional review board of Foch Hospital (00012437).

The same Pfizer-BioNTech vaccine was proposed in both our study and that of Di Noia *et al.* Refusal rates differed between our study and the Italian study. Only 5.6% (29/522) of the 522 patients in our study (218 men and 304 women) refused an offer of immediate vaccination versus 11.2% in the study by Di Noia *et al.* However, it should be noted that a French survey performed before the launch of the vaccination campaign had reported a refusal rate of 16.6% [4]. In the cohort of Di Noia *et al.*, the refusal rate even rose to 19.7% after the suspension of the AstraZeneca vaccine was announced, demonstrating the variability of attitudes towards refusal over time as a function of the information delivered by the media or social networks.

The principal finding of our study was an unexpected significant difference between men and women: 9.6% refusal (21/218) for women versus only 2.6% (8/304) for men (P value = 0.001). This difference did not seem to be because of a selection bias in our cohort. Before the start of the vaccination campaign, a similar tendency for women to be more reticent about getting vaccinated was reported for the French general population, in a large cohort of 85,855 individuals [5]: 67.6 % of men planned to get vaccinated versus only 52.8% of women. Three

* Corresponding author: Department of Ethics and Scientific Integrity, Foch Hospital, Suresnes, France.

** Corresponding author:

E-mail addresses: christian.herve@parisdescartes.fr (C. Hervé), p.beuzeboc@hopital-foch.com (P. Beuzeboc).

¹ These authors contributed equally.

² These authors contributed equally.

reasons for this difference were proposed: fears of jeopardising pregnancy plans (for young women), interference with domestic life and greater sensitivity to medical risks, with a greater mistrust of technological innovations.

In our qualitative study, 14 of the 21 women refusing immediate vaccination said that they would, *a priori*, agree to be vaccinated if vaccination was made obligatory versus only four of the eight men. As in the study by Di Noia *et al.*, a fear of secondary effects, rather than a defiance of vaccination in general, appeared to be behind this refusal, together, in some cases, with a minimisation of the individual risk of the illness. The anxiogenic and contradictory information provided specifically about this vaccine by the media and/or social networks appeared to have played a crucial role.

Outside of Europe, another study, by Villarreal-Garza *et al.* was recently published in the *Journal of the American Medical Association Oncology*. It reported an even higher rate of refusal (34 %) in a cohort of 540 women suffering from breast cancer [6]. This study also analysed the reasons given by these women to justify their refusal. Misinformation, problems of confidence in the health system and cultural reasons predominated. Age was also identified as a possible factor. The median age of the women in our series (65 years) was much higher than that in the study by Villarreal-Garza *et al.* (49 years). In their series, age, with a threshold of 60 years, was found to influence the rate of refusal.

Whatever the reasons, sex clearly appeared to be a discriminating factor in our study. How can we, as of now, improve the information provided to patients, so

as to improve the acceptability of vaccination? A pragmatic, global, bioethical reflection concerning these results is now required, particularly as the pandemic does not seem to be abating.

Conflicts of interest statement

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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